

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A concentrate adapted to be diluted with a biodegradable diluent polymer to produce a corrosion inhibiting composition effective to protect a ferrous metal surface against corrosion in a molecular-oxygen containing atmosphere containing in the range from 1 to 100 ppm of an acid gas at a relative humidity of 90% and 37.4°C (100°F), when the ferrous metal surface is exposed in generally spaced apart relationship with the composition in a sealed environment, the concentrate comprising a substantially non-hydrolyzable synthetic resinous polymer that is biodegradable or non-biodegradable having dispersed therein ~~from 10 to about 40 parts of an interceptor comprising an alkali metal silicate, or zinc oxide, or both, from 10 to 40 parts of sodium nitrite, and from 10 to 40 parts of a 2,4,6-tri substituted phenol, in combination with an adjuvant present in less than 5 parts, provided that the resinous polymer has a water vapor transmission rate (WVTR) at least as high as that of low density polyethylene[[.]] and is present in an amount of at least 40 parts in 100 parts of the concentrate.~~

2. (Currently Amended) The concentrate of claim 1, wherein said alkali metal silicate is sodium silicate, wherein said concentrate non-biodegradable non-hydrolyzable synthetic resinous polymer is miscible in the diluent polymer comprising comprises low density polyethylene, polypropylene, copolymer of lower C₂ –C₈ olefin[[s]], copolymer of lower C₂ –C₈ olefin and ethylene/vinyl alcohol, ethylene/vinyl acetate, non-biodegradable polyester, polycarbonate, polyurethane, polybutene, poly(vinyl chloride), polystyrene, polyamide, [[or a]] and wherein said concentrate biodegradable polymer having a WVTR higher than about 1.5 gm/24 hr measured per 0.025 mm (1 mil) thickness and 645 cm² (100 in²) area at 37.4°C (100°F) and 90%RH (relative humidity) comprises star ε-caprolactone, ε-caprolactone (PCL); poly(hydroxybutyrate-co-valerate) (PHBV); uncoated- or nitrocellulose-coated cellophane film; crosslinked chitosan; starch/ethylene vinyl alcohol (St/VOH) blend film; pure ethylene vinyl alcohol film; or polycaprolactone (PCL).

3 (Currently Amended) The concentrate of claim 2, wherein ~~[[the]]~~ said diluent biodegradable polymer ~~is a biodegradable polymer comprising~~ comprises star ϵ -caprolactone, ϵ -caprolactone (PCL); poly(hydroxybutyrate-co-valerate) (PHBV); uncoated-~~[[and]]~~ or nitrocellulose-coated cellophane film~~[[s]]~~; crosslinked chitosan; starch/ethylene vinyl alcohol (St/VOH) blend film~~[[s]]~~; pure ethylene vinyl alcohol film; or polycaprolactone (PCL).

4. (Currently Amended) The concentrate of claim ~~[[2]]~~ 3, wherein the 2,4,6-tri-substituted phenol comprises 2,6-di-t-butyl-4-methylphenol; 2,2'-methylene-bis(4-methyl-6-t-butylphenol); 1,1,3-tris(2'-methyl-4'-hydroxy-5'-t-butylphenyl)butane; 1,3,5-tri(3',5'-di-t-butyl-4'-hydroxybenzyl)-2,4,6-trimethylbenzene; tris((3-(3',5'-di-t-butyl-4'-hydroxybenzyl)-2'-acetoxyethyl))isocyanurate; or, pentaerythrityl-tetrakis~~[[]]~~(3,5-di-t-butyl-4-hydroxyphenylpropionate), or a combination thereof.

5. (Previously Presented) The concentrate of claim 4, wherein the adjuvant comprises fumed silica or calcium carbonate.

6. (Currently Amended) The concentrate of claim 2, wherein the interceptor and the sodium nitrite have a primary particle size, independently, in the range from about 1 ~~[[μ m]]~~ to 53 ~~[[μ m]]~~ microns and are substantially homogeneously dispersed in the polymer.

7-15. (Cancelled).

16. (Currently Amended) The concentrate of claim 1, wherein the particle size of said alkali metal silicate or said zinc oxide, independently, is from 1 to 45 microns, wherein the particle size of said sodium nitrite is from 1 to 45 microns ~~and wherein the particle size of said trisubstituted phenol is from 1,180 to 710 microns.~~

17. (Currently Amended) The concentrate of claim 3, wherein the particle size of said alkali metal silicate or said zinc oxide, independently, is from 1 to 45 microns, wherein the particle size of said sodium nitrite is from 1 to 45 microns ~~and wherein the particle size of said trisubstituted phenol is from 1,180 to 710 microns.~~

18. (Currently Amended) The concentrate of claim 5, wherein the particle size of said alkali metal silicate or said zinc oxide, independently, is from 1 to 45 microns, wherein the particle size of said sodium nitrite is from 1 to 45 microns, ~~wherein the particle size of said trisubstituted phenol is from 1,180 to 710 microns~~, and wherein the particle size of said fumed silica or calcium carbonate is less than 1 micron.

19. (Currently Amended) A composition, comprising the concentrate of claim 1, and said biodegradable diluent polymer, said composition comprising:

from 0.01% to 2% by weight of each of said alkali metal silicate, or said zinc oxide, or both;

from 0.01 % to 2% by weight of said sodium nitrite; and

from 0.01% to 2% by weight of said trisubstituted phenol; ~~and~~

~~wherein said remainder of said composition is substantially said biodegradable or said non-biodegradable diluent polymer.~~

20. (Currently Amended) A composition, comprising the concentrate of claim ~~[[2]]~~ 3, and said biodegradable diluent polymer, said composition comprising:

from 0.01% to 2% by weight of each of said alkali metal silicate, or said zinc oxide, or both;

from 0.01 % to 2% by weight of said sodium nitrite; and

from 0.01% to 2% by weight of said trisubstituted phenol; ~~and~~

wherein said concentrate polymer ~~remainder of said composition~~ is substantially said biodegradable ~~or said non-biodegradable diluent polymer.~~

21. (Currently Amended) A composition, comprising the concentrate of claim ~~[[3]]~~ 16, and said biodegradable diluent polymer, said composition comprising
from 0.01% to 2% by weight of each of said alkali metal silicate, or said zinc oxide, or both;
from 0.01 % to 2% by weight of said sodium nitrite; and
from 0.01% to 2% by weight of said trisubstituted phenol; and
~~wherein said remainder of said composition is substantially said biodegradable or said non-biodegradable diluent polymer.~~

22. (Currently Amended) A composition, comprising the concentrate of claim 18, and said biodegradable diluent polymer, said composition comprising
from 0.01% to 2% by weight of each of said alkali metal silicate or said zinc oxide or both;
from 0.01 % to 2% by weight of said sodium nitrite;
from 0.01% to 2% by weight of said trisubstituted phenol; and
from about 0.01% to ~~[[5]]~~ 1% by weight of said fumed silica or said calcium carbonate;
and
wherein said concentrate polymer ~~remainder of said composition~~ is substantially said biodegradable or said non-biodegradable diluent polymer.

23. (Cancelled).

24. (Cancelled).

25. (Currently Amended) The concentrate of claim ~~[[24]]~~ 2, ~~wherein said alkali metal silicate is sodium silicate~~, wherein the 2,4,6-tri-substituted phenol comprises 2,6-di-t-butyl-4-methylphenol; 2,2'-methylene-bis(4-methyl-6-t-butylphenol); 1,1,3-tris(2'-methyl-4'-hydroxy-5'-t-butylphenyl)butane; 1,3,5-tri(3',5'-di-t-butyl-4'-hydroxybenzyl)-2,4,6-trimethylbenzene; tris((3-(3',5'-di-t-butyl-4'-hydroxybenzyl)-2'-acetoxyethyl))isocyanurate; or, pentaerythrityl-tetrakis~~[[I]]~~(3,5-di-t-butyl-4hydroxyphenylpropionate), or combinations thereof, and

wherein the adjuvant comprises fumed silica and calcium carbonate.

26. (Currently Amended) A corrosion inhibiting composition effective to protect a ferrous metal surface against corrosion in a molecular-oxygen containing atmosphere containing in the range from 1 to 100 ppm of an acid gas at a relative humidity of 90% and 37.4°C (100°F), when the ferrous metal surface is exposed in generally spaced apart relationship with the composition in a sealed environment, the composition comprising: a substantially non-hydrolyzable synthetic resinous polymer that is a biodegradable ~~or non-biodegradable~~ polymer having dispersed therein from 0.01% to 2% by weight of each of an interceptor comprising an alkali meta silicate, or zinc oxide, or both, from 0.01% to 2% by weight of sodium nitrite, and from 0.01% to 2% by weight of a 2,4,6-trisubstituted phenol, and less than ~~[[5]]~~ 1% by weight of an adjuvant, provided that the polymer has a water vapor transmission rate (WVTR) at least as high as that of low density polyethylene, ~~and wherein said biodegradable polymer or said non-biodegradable polymer constitutes substantially the remainder by weight of said corrosion inhibiting composition.~~

27. (Currently Amended) The corrosion inhibiting composition of claim 26, wherein said alkali metal silicate is sodium silicate, wherein said biodegradable polymer comprises a star ϵ -caprolactone, ϵ -caprolactone (PCL); poly(hydroxybutyrate-co-valerate) (PHBV); uncoated-~~[[and]]~~ or nitrocellulose-coated cellophane film~~[[s]]~~; crosslinked chitosan; starch/ethylene vinyl alcohol (St/VOH) blend film; pure ethylene vinyl alcohol film; and polycaprolactone (PCL), ~~and wherein said non-biodegradable polymer comprises low density polyethylene, polypropylene, copolymer of lower C₂—C₈ olefins, copolymer of lower C₂—C₈ olefin and ethylene/vinyl alcohol, polycarbonate, polyurethane, polybutene, poly(vinyl chloride), polystyrene, polyamide, and the biodegradable polymer having a WVTR higher than about 1.5 gm/24 hr measured per 0.025 mm (mil) thickness and 645 cm² (100 in²) area at 37.4°C (100°F) and 90%RH (relative humidity).~~

28. (Currently Amended) The corrosion inhibiting composition of claim 27, wherein said biodegradable polymer is a star ϵ -caprolactone, ϵ -caprolactone (PCL), or polycaprolactone, ~~and wherein said non-biodegradable polymer is low density polyethylene, or ethylene/vinyl acetate copolymer.~~

29. (Previously Amended) The corrosion inhibiting composition of claim 27, wherein the adjuvant comprises fumed silica or calcium carbonate.

30. (Currently Amended) The corrosion inhibiting composition of claim 26, wherein the amount of each of said alkali metal silicate or said zinc oxide, or both, is from ~~[[0.01]]~~ 0.05% to 1% by weight, wherein the amount of said sodium nitrite is from 0.05% to 1% by weight, wherein the amount of said trisubstituted phenol is from 0.05% to 1% by weight, and wherein the amount of said adjuvant is from 0.01% to 1% by weight, ~~and wherein the amount of said trisubstituted phenol is from 0.05% to 1% by weight.~~

31. (Currently Amended) The corrosion inhibiting composition of claim 29, wherein the amount of each of said alkali metal silicate or said zinc oxide, or both, is from ~~[[0.01]]~~ 0.05% to 1% by weight, wherein the amount of said sodium nitrite is from 0.05% to 1% by weight, wherein the amount of said trisubstituted phenol is from 0.05% to 1% by weight, and wherein the amount of said adjuvant is from 0.01% to 1% by weight, ~~and wherein the amount of said trisubstituted phenol is from 0.05% to 1% by weight.~~

32. – 37. (Cancelled).

38. (New) The corrosion inhibiting composition of claim 30, wherein the alkali metal silicate and said zinc oxide, independently, has a primary particle size of from about 1 to 53 microns and are substantially homogeneously dispersed in the polymer, wherein said sodium nitrite has a primary particle size of from about 1 to 53 microns and is substantially homogeneously dispersed in the polymer, and wherein said adjuvant has a particle size of less than 1 micron.

39. (New) The corrosion inhibiting composition of claim 31, wherein the alkali metal silicate and said zinc oxide, independently, has a primary particle size of from about 1 to 53 microns and are substantially homogeneously dispersed in the polymer, wherein said sodium nitrite has a primary particle size of from about 1 to 53 microns and is substantially homogeneously dispersed in the polymer, and wherein the particle size of said fumed silica and said calcium carbonate, independently, is less than 1 micron.

40. (New) A concentrate adapted to be diluted with a non-biodegradable polymer diluent to produce a corrosion inhibiting composition effective to protect a ferrous metal surface against corrosion in a molecular-oxygen containing atmosphere containing in the range from 1 to 100 ppm of an acid gas at a relative humidity of 90% and 37.4°C (100°F), when the ferrous metal surface is exposed in generally spaced apart relationship with the composition in a sealed environment, the concentrate comprising a substantially non-hydrolyzable synthetic resinous polymer that is biodegradable or non-biodegradable having dispersed therein an interceptor comprising an alkali metal silicate, or zinc oxide, or both, from 10 to 40 parts of sodium nitrite, and a 2,4,6-tri substituted phenol, in combination with an adjuvant present in less than 5 parts, provided that the resinous polymer has a water vapor transmission rate (WVTR) at least as high as that of low density polyethylene and is present in an amount of at least 40 parts in 100 parts of the concentrate.

41. (New) A concentrate of claim 40, wherein said alkali metal silicate is sodium silicate, wherein said concentrate non-biodegradable polymer comprises low density polyethylene, polypropylene, copolymer of lower C₂ –C₈ olefin, copolymer of lower C₂ –C₈ olefin and ethylene/vinyl alcohol, ethylene/vinyl acetate, non-biodegradable polyester, polycarbonate, polyurethane, polybutene, poly(vinyl chloride), polystyrene, polyamide, and wherein said concentrate biodegradable polymer comprises star ε-caprolactone, ε-caprolactone (PCL); poly(hydroxybutyrate-co-valerate) (PHBV); uncoated- or nitrocellulose-coated cellophane film; crosslinked chitosan; starch/ethylene vinyl alcohol (St/VOH) blend film; pure ethylene vinyl alcohol film; or polycaprolactone (PCL).

42. (New) The concentrate of claim 41, wherein said non-biodegradable diluent polymer comprises low density polyethylene, polypropylene, copolymer of lower C₂ –C₈ olefin, copolymer of lower C₂ –C₈ olefin and ethylene/vinyl alcohol, ethylene/vinyl acetate, non-biodegradable polyester, polycarbonate, polyurethane, polybutene, poly(vinyl chloride), and polystyrene, polyamide, wherein the adjuvant comprises fumed silica or calcium carbonate, and wherein the interceptor and the sodium nitrite have a primary particle size, independently, in the range from about 1 µm to 53 µm and are substantially homogeneously dispersed in the polymer.

43. (New) The concentrate of claim 40, and said non-biodegradable diluent polymer, said composition comprising:

from 0.01% to 2% by weight of each of said alkali metal silicate or said zinc oxide, or both;

from 0.01 % to 2% by weight of said sodium nitrite; and

from 0.01% to 2% by weight of said trisubstituted phenol.

44. (New) The concentrate of claim 42, and said non-biodegradable diluent polymer, said composition comprising:

from 0.01% to 2% by weight of each of said alkali metal silicate, or said zinc oxide, or both;

from 0.01 % to 2% by weight of said sodium nitrite; and

from 0.01% to 2% by weight of said trisubstituted phenol;

wherein said concentrate polymer is said non-biodegradable polymer.

45. (New) The concentrate of claim 43, wherein the particle size of said alkali metal silicate or said zinc oxide, independently, is from 1 to 45 microns, wherein the particle size of said sodium nitrite is from 1 to 45 microns, and wherein the particle size of said adjuvant is less than 1 micron.

46. (New) The concentrate of claim 44, wherein the particle size of said alkali metal silicate or said zinc oxide, independently, is from 1 to 45 microns, wherein the particle size of said sodium nitrite is from 1 to 45 microns, and wherein the particle size of said fumed silica or calcium carbonate is less than 1 micron.

47. (New) A corrosion inhibiting composition effective to protect a ferrous metal surface against corrosion in a molecular-oxygen containing atmosphere containing in the range from 1 to 100 ppm of an acid gas at a relative humidity of 90% and 37.4°C (100°F), when the ferrous metal surface is exposed in generally spaced apart relationship with the composition in a sealed environment, the composition comprising: a substantially non-hydrolyzable synthetic resinous polymer that is a non-biodegradable polymer having dispersed therein from 0.01% to 2% by weight of each of an interceptor comprising an alkali metal silicate, or zinc oxide, or both, from 0.01% to 2% by weight of sodium nitrite, and from 0.01% to 2% by weight of a 2,4,6-trisubstituted phenol, and less than 1% by weight of an adjuvant, provided that the polymer has a water vapor transmission rate (WVTR) at least as high as that of low density polyethylene.

48. (New) The corrosion inhibiting composition of claim 47, wherein said alkali metal silicate is sodium silicate, wherein said non-biodegradable polymer comprises low density polyethylene, polypropylene, copolymer of lower C₂ –C₈ olefin, copolymer of lower C₂ –C₈ olefin and ethylene/vinyl alcohol, ethylene/vinyl acetate, polycarbonate, polyurethane, polybutene, poly(vinyl chloride), polystyrene, or polyamide.

49. (New) The corrosion inhibiting composition of claim 48, wherein said non-biodegradable polymer is low density polyethylene, or ethylene/vinyl acetate copolymer.

50. (New) The corrosion inhibiting composition of claim 48, wherein the adjuvant comprises fumed silica or calcium carbonate.

51. (New) The corrosion inhibiting composition of claim 47, wherein the amount of each of said alkali metal silicate or said zinc oxide, or both, is from 0.05% to 1% by weight, wherein the amount of said sodium nitrite is from 0.05% to 1% by weight, wherein the amount of said trisubstituted phenol is from 0.05% to 1% by weight, and wherein the amount of said adjuvant is from 0.01% to 1% by weight.

52. (New) The corrosion inhibiting composition of claim 50, wherein the amount of each of said alkali metal silicate or said zinc oxide, or both, is from 0.05% to 1% by weight, wherein the amount of said sodium nitrite is from 0.05% to 1% by weight, wherein the amount of said trisubstituted phenol is from 0.05% to 1% by weight, and wherein the amount of said adjuvant is from 0.05% to 1% by weight.

53. (New) The corrosion inhibiting composition of claim 51, wherein the alkali metal silicate and said zinc oxide, independently, has a primary particle size of from about 1 to 53 microns and are substantially homogeneously dispersed in the polymer, wherein said sodium nitrite has a primary particle size of from about 1 to 53 microns and is substantially homogeneously dispersed in the polymer, and wherein said adjuvant has a particle size of less than 1 micron.

54. (New) The corrosion inhibiting composition of claim 52, wherein the alkali metal silicate and said zinc oxide, independently, has a primary particle size of from about 1 to 53 microns and are substantially homogeneously dispersed in the polymer, wherein said sodium nitrite has a primary particle size of from about 1 to 53 microns and is substantially homogeneously dispersed in the polymer, and wherein said adjuvant has a particle size of less than 1 micron.